

CLAIMS

1 - An installation for the high-speed acquisition of acquisition data via an Ethernet network (2) with several 5 nodes (N), where at least one of the nodes of the Ethernet network constitutes a client/server detection unit (3) with at least one detector (4) delivering acquisition data,

characterised in that each detection unit (3) includes:

- self-triggering resources for reading the acquisition data 10 so that the said detection unit (3) is able to operate independently,
- reading and processing resources independent of the other nodes,
- resources for transmission of the acquisition data via the 15 network (2) to at least one other node (N),
- and a clock unit allowing correlation between the clocks of the detection units, where each clock unit has:
 - resources for receiving a clock synchronisation signal, generated by one of the said units and including encoded 20 instructions,
 - resources for transmission of an acknowledge signal to the clock unit transmitting a synchronisation signal,
 - and resources for processing the encoded instructions, in particular to increment an event-marking sensor.

25 2 - An installation according to claim 1, characterised in that at least one of the nodes (N) of the Ethernet network (2) constitutes a client/server user unit (10) designed to provide the detection unit (3) with configuration data from the said unit, and to receive acquisition data transmitted by 30 the detection unit (3).

3 - An installation according to claims 1 and 2, characterised in that each detection unit (3) includes:

- a detector (4) performing the conversion of a physical magnitude into electrical signals delivered on several output paths,

- and a sequencer (13) with resources performing:

5 • sequencing for reading the acquisition data from the detector and the configuration data,

• storage of the acquisition and configuration data,

• analysis and processing of the acquisition data from the detector,

10 • the interface to a network processor (2),

- and an Ethernet network processor (14) with resources providing:

• the interface to the sequencer,

• reception of the data sent by the user unit (10) to 15 perform the configuration of the detector (4) and of the sequencer (13),

• processing of the acquisition data,

• and transmission of the acquisition data from the detector (4) to the user unit (10).

20 4 - An installation according to claim 3, characterised in that the sequencer (13) includes resources performing:

- formatting of the acquisition data from the detector (4) and of the information resulting from the processing effected by the detection unit (3),

25 - storage in a memory (16) of the processed and formatted acquisition data,

- and temporal marking of the trigger for acquisition of the data.

30 5 - An installation according to claim 4, characterised in that the sequencer (13) is built around an FPGA device.

6 - An installation according to claims 1 and 3, characterised in that the Ethernet network processor (14) includes resources performing:

- retrieval of the data stored in the memory (16) by the sequencer (13),
- analysis and processing of the said data,
- formatting of the processed data,
- and shared management of the data processing with other nodes of the network (2).

10 7 - An installation according to claim 4, characterised in that the sequencer (13) performs the storage of the data in memory (16) inside or outside the sequencer.

8 - An installation according to claim 1, characterised in that the detector (4) includes :

- 15 - a sensitive sensor with a series of output paths,
- a sub-module for reading the acquisition data, controlled by the sequencer and including a frontal electronic unit,
- and a control sub-module managed by the sequencer to configure and control the frontal electronic unit.

20 9 - An installation according to claim 8, characterised in that the frontal electronic unit of the read sub-module includes:

- resources for reading the acquisition data, resources for selection of the acquisition mode, and resources for 25 selection of the acquisition trigger source,
- resources for amplification and shaping of the signals,
- and resources for receiving the configuration parameters.

10 - An installation according to claim 8, characterised in that the control sub-module includes resources to control 30 the frontal electronic unit and to control the detector.